

**SAS Superstructure**

Location: 04-SF-80-13.2 / 13.9

Client Name: CalTrans

Run date 22-Nov-14

Time 7:08 AM

Daily Diary Report by Bid Item

Contract No.: 04-0120F4

Diary #: 1022 Const Calendar Day: 595 Date: 20-Jan-2014 Monday

Inspector Name: Brignano, Bob Title: Transportation Engineer

Inspection Type:

Shift Hours: Break: Over Time:

Federal ID:

Location:

Reviewer: Schmitt, Alex Approved Date: Status: Submit

**04-0120F4
04-SF-80-13.2/13.9
Self-Anchored
Suspension Bridge****Weather**

Temperature	7 AM	12 PM	4 PM
Precipitation			Condition clear

Working Day ☒ If no, explain:**Diary:**

Dispute

General Comments

CCO 314, SAMPLING AND TESTING A354 GRADE BD MATERIAL:



VGO from Oregon is working on site today with 3 engineers – Dave Van Dyke, Rob Rutledge, and Nick Buck. Rob flies in today in the morning and Nick picks him up from the airport. Dave and Nick fly out this evening with Rob taking them to the airport. They start work on site approximately 0800 (except for Rob in flight at that time) and leave the site approximately 1630 after an 8 hour day in the field. They also work overtime for the evening ride to the airport and flight home. They are present for producing the morning data reports, monitoring during the morning jack adjustment at TR 7, monitoring during the morning/afternoon jacking steps at TR's 5 through 11, and producing the evening data reports.

ABF Engineer Kelvin Chen is working in the field and office on CCO 314 all day today. ABF Engineering Manager Kevin Smith is also working part time in the field on CCO 314 today for the TR 7 jack adjustment operation and some jacking steps – he is in the field approximately 0800 through 1200 today.

Ironworkers Barry Rothman and Jared Garrett are working an 8-hour shift 0700 through 1530 today, with most of that on CCO 314. They arrive at the CCO 314 test rig area approximately 0900 and work there until the end of shift at 1530. They work approximately 6 hours on CCO with the remainder of the day on non-CCO operations elsewhere at the Pier 7 warehouse area not covered by this diary. Ironworker Ricky Damboise also works part of today on the CCO 314 operations – he is assisting with TR 7 jack issues for approximately 2 hours between 0930 and 1130 and his other non-CCO operations elsewhere at the Pier 7 warehouse area not covered by this diary. Ironworker John (Ryan) Duskin also works briefly (~ half hour) on CCO at the end of the day to assist the other ironworkers with gathering materials. Note that today is the Martin Luther King Jr. State Holiday, but it is not a union holiday, so the ironworkers are not working overtime during today's 8-hour shift.

At TR 6, there has been a slow drip from the leak at the grommet between the wet chamber and the dry chamber. The leak has been slow enough that the wet chamber can be periodically refilled. This morning at approximately 0850, Elijah Turner with CT-METS for the Acoustic Emissions monitoring is notified so that he can time-mark the AE activity, and then I refill the wet chamber with more NaCl solution.

At TR 7, because of the uneven/skewed jacking of the jacking beam by the pair or jacks, there is work this morning to even out the jack pair and switch the jack pairs that will be used in future jacking steps. The Test Rod and Jacking Rod in the test rig are at 936 kips at the start of the operation, so VGO is present for monitoring to determine if tension is being added and CT-METS AE personnel are monitoring to verify cracks are not propagating in the test rod which would be a safety issue when working around the rod. Work on the test rig starts after 0900, after the ironworkers, VGO, and CT-METS are ready. From CT-



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METS, Elijah Turner is present with MISTRAS personnel on the phone line continuously monitoring all frequencies on the two channels for this test rig during this operation.

The activities at TR 7 jacks are with no work on the nut at the north end plate on the test rig, with work activities on the jacks and the jacking rod that extends from the test rig into the jacking beam. The intent is to not affect the jacking rod and test rod inside the test rig. Between 0900 and 1000, the activities are not directly on the jacks, because the ironworkers need to fill the reservoir in the hydraulic pump (it was low from extending so many jacks in previous jacking steps) and getting fittings to allow bleed out from the hydraulic hoses while not connected to a pump or jack on one end so that jacks and hoses can be bleed while observing the hydraulic fluid for the presence of air. After the morning break, starting about 1020, the hydraulic pump is used to pump through hydraulic fluid in the hoses formerly used at Jacks A and B (the hoses are disconnected from the jacks for this step) to check for air – no air is noticed. The hose for Jack A is replaced despite there being no issues because this jack has been running behind Jack B in previous jacking steps. Each hydraulic hose is then inspected to verify that all the fittings are tight. Then, the hoses are configured to extend Jacks C and D while bleeding out hydraulic fluid at Jacks A and B. In previous jacking steps, Jacks C and D had not been extended while utilizing Jacks A and B. Using Jacks C and D connected to the hydraulic pump, the pistons in Jacks A and B are retracted and hydraulic fluid is bleed off into a bucket. This operation is stopped when the red line is observed on the piston at Jack D – there is no end stop on these 500-ton jacks, with the red line meaning that the jack piston is close to coming out of the jack housing. Then, the hoses are reconfigured to jack only at Jack C to straighten the jacking beam while bleeding hydraulic fluid from Jack D. At the end of this step, the jacks are essentially even (within 5mm) and Jacks C and D are ready for the next jacking step – switching from Jacks A and B to Jacks C and D for today's jacking step to determine if the problem is with the jacks used in previous jacking steps. This operation on the jacks is complete at 1116, and then the first jacking step is started at TR 7 at 1116.

For the jacking steps, Elijah Turner from CT-METS is present with MISTRAS personnel on the phone line continuously monitoring all frequencies on the two channels for each test rig during the jacking operation. Also present is Lindsay Motal from the DJV during all jacking steps.

Test Rig #7 (4" dia., Tower Saddle Tie Rod, rod ID 5) Jacking step:

This is the 6th jacking step and the rod is being jacked to 0.65 Fu. The post-seating of the nut target is 1,008.280 +10/-0 kips. The expected hydraulic pressure at this locked off force is 4,500 psi. Based on the previous jacking step, the expected seating loss is ~60 kips, meaning the initial jacking target is ~1,070 kips. There is no end stop on the 500-ton jacks used in this test rig, with a red line showing on a jack piston meaning that the jack piston is close to coming out of the jack housing, so the jacks are visually monitored during the jacking steps at this test rig to look for the red line. Jacking is started at 1116. At 4,500 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,019 kips. The hydraulic pressure is increased to 4,800 psi and the primary strain gauges give a force of 1,083 kips. The AE is checked with the ok given at 1122. The extension of the jacks is checked to see if both pairs of jacks are jacking evenly – they are out by ~7mm with a slight skew of the jacking beam. The nut is tightened, but it does not move. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,082 kips (bleed loss = 1 kip). After bleeding off the jacks, the primary strain gauges give a force of 946 kips (seating loss = 136 kips). For the second jacking step, at 4,800 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,087 kips. The AE is checked with the ok given at 1136. The washer is hit to verify that it is loose. The nut is tightened – the nut/rod threads are tight fit and it takes extra effort to move the nut. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,085 kips (bleed loss = 2 kips). After bleeding off the jacks, the primary strain gauges give a force of 1,022 kips (seating loss = 63 kips). The force is above the tolerance, so the third jacking step is begun at 1143. For the third jacking step, at 4,800 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,090 kips. The AE is checked with the ok given at 1145. The nut is slightly loosened. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,088 kips (bleed loss = 2 kips). After bleeding off the jacks, the primary strain gauges give a force of 1,017.8 kips (seating loss = 70 kips, but it is with loosening of the nut). At 1146, the force is within the tolerance.

Test Rig #8 (3.5" dia., PWS Anchor Rod, Rolled Threads, rod ID E-118, Heat OYI) Jacking step:



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This is the 6th jacking step and the rod is being jacked to 0.65 Fu. The post-seating of the nut target is 758.030 +10/-0 kips. The expected hydraulic pressure at this locked off force is 4,400 to 4,500 psi. Based on the previous jacking step, the expected seating loss is ~50 kips, meaning the initial jacking target is ~810 kips. Jacking is started at 1148. At 4,400 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 747 kips. The hydraulic pressure is increased to 4,700 psi and the primary strain gauges give a force of 785 kips. The hydraulic pressure is increased to 4,800 psi and the primary strain gauges give a force of 802 kips. The hydraulic pressure is increased to 4,850 psi and the primary strain gauges give a force of 811 kips. The AE is checked with the ok given at 1153. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 808 kips (bleed loss = 3 kips). After bleeding off the jacks, the primary strain gauges give a force of 747 kips (seating loss = 61 kips), which is not in tolerance. For the second jacking step, at 4,850 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 817 kips. The AE is checked with the ok given at 1156. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 814 kips (bleed loss = 3 kips). After bleeding off the jacks, the primary strain gauges give a force of 757 kips (seating loss = 57 kips), which is not in tolerance. For the third jacking step, at 4,850 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 817 kips. The AE is checked with the ok given at 1159. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 815 kips (bleed loss = 2 kips). After bleeding off the jacks, the primary strain gauges give a force of 758.8 kips (seating loss = 56 kips). At 1200, the force is within the tolerance, and the lunch break starts.

Test Rig #9 (3.5" dia., PWS Anchor Rod, Rolled Threads, rod ID W-074, Heat OTD) Jacking step:
This is the 7th jacking step and the rod is being jacked to 0.70 Fu. The post-seating of the nut target is 816.340 +10/-0 kips. The expected hydraulic pressure at this locked off force is 4,800 psi. Based on the previous jacking step, the expected seating loss is ~55 kips, meaning the initial jacking target is ~870 kips. Jacking is started at 1240. At 4,800 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 810 kips. The hydraulic pressure is increased to 5,100 psi and the primary strain gauges give a force of 854 kips. The hydraulic pressure is increased to 5,200 psi and the primary strain gauges give a force of 872 kips. The AE is checked with the ok given at 1247. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 866 kips (bleed loss = 6 kips). After bleeding off the jacks, the primary strain gauges give a force of 805 kips (seating loss = 61 kips), which is not in tolerance. For the second jacking step, at 5,200 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 873 kips. The AE is checked with the ok given at 1252. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 869 kips (bleed loss = 4 kips). After bleeding off the jacks, the primary strain gauges give a force of 810 kips (seating loss = 59 kips), which is not in tolerance. For the third jacking step, at 5,200 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 884 kips. The AE is checked with the ok given at 1255. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 880 kips (bleed loss = 4 kips). After bleeding off the jacks, the primary strain gauges give a force of 820 kips (seating loss = 60 kips). At 1256, the force is within the tolerance.

Test Rig #10 (3.5" dia., PWS Anchor Rod, Cut Threads, rod ID E-036, Heat OTD) Jacking step:
This is the 8th jacking step and the rod is being jacked to 0.75 Fu. The post-seating of the nut target is 874.650 +10/-0 kips. The expected hydraulic pressure at this locked off force is 5,100 psi. Based on the previous jacking step, the expected seating loss is ~60 kips, meaning the initial jacking target is ~935 kips. Jacking is started at 1258. At 5,100 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 877 kips. The hydraulic pressure is increased to 5,400 psi and the primary strain gauges give a force of 917 kips. The hydraulic pressure is increased to 5,500 psi and the primary strain gauges give a force of 937 kips. The AE is checked with the ok given at 1304. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 932 kips (bleed loss = 5 kips). After bleeding off the jacks, the primary strain gauges give a force of 843 kips (seating loss = 89 kips), which is not in tolerance. For the second jacking step, at 5,550 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 948 kips. The AE is checked with the ok given at 1310. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 943 kips (bleed loss = 5 kips). After bleeding off the jacks, the primary strain gauges give a force of 856 kips (seating loss = 87 kips), which is not in tolerance. For the third jacking step, at 5,600 psi hydraulic pressure per the dial

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gauge, the primary strain gauges give a force of 954 kips. The AE is checked with the ok given at 1316. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 949 kips (bleed loss = 5 kips). After bleeding off the jacks, the primary strain gauges give a force of 868 kips (seating loss = 81 kips), which is not in tolerance. For the fourth jacking step, at 5,600 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 962 kips. The AE is checked with the ok given at 1323. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 957 kips (bleed loss = 5 kips). After bleeding off the jacks, the primary strain gauges give a force of 879 kips (seating loss = 78 kips). At 1325, the force is within the tolerance.

Test Rig #11 (3.5" dia., PWS Anchor Rod, Cut Threads, rod ID E-110, Heat OOF) Jacking step:

This is the 9th jacking step and the rod is being jacked to 0.80 Fu. The post-seating of the nut target is 932.860 +10/-0 kips. The expected hydraulic pressure at this locked off force is 5,500 psi. Based on the previous jacking step, the expected seating loss is ~65 kips, meaning the initial jacking target is ~1,000 kips. Jacking is started at 1326. At 5,500+ psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 942 kips. The hydraulic pressure is increased to 5,800 psi and the primary strain gauges give a force of 991 kips. The hydraulic pressure is increased to 5,850 psi and the primary strain gauges give a force of 1,000 kips. The AE is checked with the ok given at 1332. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 993 kips (bleed loss = 7 kips). After bleeding off the jacks, the primary strain gauges give a force of 922 kips (seating loss = 71 kips), which is not in tolerance. For the second jacking step, at 5,900 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,011 kips. The AE is checked with the ok given at 1337. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,007 kips (bleed loss = 4 kips). After bleeding off the jacks, the primary strain gauges give a force of 936 kips (seating loss = 71 kips). At 1338, the force is within the tolerance.

Test Rig #5 (2" dia., E2 Bearing Upper Rod, spare rod) Jacking step:

This is the 5th jacking step and the rod is being jacked to 0.60 Fu. The post-seating of the nut target is 225.000 +5/-0 kips. The expected hydraulic pressure at this locked off force is 1,600 psi. Based on the previous jacking step, the expected seating loss is ~11~12 kips, meaning the initial jacking target is ~240 kips. Jacking is started at 1340. At 1,700 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 224 kips, but then the hydraulic pressure bleeds to 1,600 psi without a force change – this is due to the fluid flowing through the return hoses on these 300-ton jacks. The hydraulic pressure is increased to 1,800 psi and the primary strain gauges give a force of 241 kips. The AE is checked with the ok given at 1344. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 237 kips (bleed loss = 4 kips). After bleeding off the jacks, the primary strain gauges give a force of 223 kips (seating loss = 14 kips), which is not in tolerance. For the second jacking step, at 1,800 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 239 kips. The AE is checked with the ok given at 1347. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 237 kips (bleed loss = 2 kips). After bleeding off the jacks, the primary strain gauges give a force of 223 kips (seating loss = 14 kips), which is not in tolerance. For the third jacking step, at 1,800 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 247 kips. The AE is checked with the ok given at 1352. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 243 kips (bleed loss = 4 kips). After bleeding off the jacks, the primary strain gauges give a force of 229 kips (seating loss = 14 kips). At 1353, the force is within the tolerance.

Test Rig #6 (3" dia., Tower Anchor Rod, Vulcan, rod ID b2W-6) Jacking step:

This is the 4th jacking step and the rod is being jacked to 0.55 Fu. The post-seating of the nut target is 459.690 +10/-0 kips. The expected hydraulic pressure at this locked off force is 3,300 psi. Based on the previous jacking step, the expected seating loss is ~30 kips, meaning the initial jacking target is ~490 kips. Jacking is started at 1354. At 3,300 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 445 kips. The hydraulic pressure is increased to 3,600 psi and the primary strain gauges give a force of 457 kips. The hydraulic pressure is increased to 3,800 psi and the primary strain gauges give a force of 487 kips. The AE is checked with the ok given at 1358. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 485 kips (bleed loss = 2 kips). After bleeding off the jacks, the primary strain gauges give a force of 452 kips (seating loss = 33 kips), which is

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not in tolerance. For the second jacking step, at 3,800 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 487 kips. The hydraulic pressure is increased to 3,850 psi and the primary strain gauges give a force of 491 kips. The AE is checked with the ok given at 1403. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 489 kips (bleed loss = 2 kips). After bleeding off the jacks, the primary strain gauges give a force of 456 kips (seating loss = 33 kips), which is not in tolerance. For the third jacking step, at 3,900 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 505 kips. The AE is checked with the ok given at 1405. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 503 kips (bleed loss = 2 kips). After bleeding off the jacks, the primary strain gauges give a force of 469.3 kips (seating loss = 34 kips). At 1406, the force is within the tolerance.

VGO's reference electrode and pH checks, were not done this morning prior to the jacking steps because they were busy with the work on the jacks at TR 7. These reference electrode and pH checks happen instead in the afternoon after the jacking steps. This operation is between 1415 and 1500 at TR's 5 through 11. Elijah Turner with CT-METS for the Acoustic Emissions monitoring is notified so that he can time-mark the AE activity.

More operations are planned tomorrow at TR 7, so the ironworkers get the necessary rigging to pull back the jacking beam to retract the jacks. The plan is to retract the jacks and pull back the beam so we are starting with no jack piston extension to see if that will enable the jack pair to jack out the jacking beam evenly. The ironworkers gather the necessary equipment between the 1406 end of the jacking steps and the 1530 end of shift.

At TR 6, the leak rate through grommet between the wet chamber and the dry chamber increased with today's jacking step. The leak has been slow enough that the wet chamber can be periodically refilled, but now with an increased leak rate, an automatic refill system is necessary. After the 1406 end of the jacking steps, I get the necessary materials to setup the automatic refill system at this test rig. About 1500, I am done connecting the hose from the 300 gallon NaCl tank to the intermediate tank with the float valve and the siphon hose is inserted into the test rig wet chamber. Elijah Turner with CT-METS for the Acoustic Emissions monitoring is notified so that he can time-mark the AE activity when the siphon hose is inserted into the wet chamber.

There is a hydraulic pump (Powerteam) in use during the TR 7 jack adjustment and the TR 5 through 11 jacking steps. A generator – Whisperwatt 7000 – ABF ID 002343 is on idle/standby at the work area most of the day and is only used briefly. Another generator – MQ Power – ABF ID 002051 is in use during the TR 7 jack adjustment and the TR 5 through 11 jacking steps. A compressor IR P185R ABF ID 002075 is idle during today's operations. A Kubota cart is used by the ironworkers today.

Note that there is k-rail at this work area. Some of the k-rail is rented and addressed by the rental agreement. Some of the k-rail is ABF's k-rail used on site and paid as rented from ABF on a daily basis. To elevate the k-rail, crane mats and timber blocking (12x12's) are in use. The k-rail quantities are as follows:

10' bought k-rail = 20 pieces
10' ABF k-rail = 8 pieces
20' rented k-rail = 22 pieces
20' ABF k-rail = 29 pieces

The agreed extra work with ABF is as follows:

Engineer Kelvin Chen - 8 hrs
Ironworker Barry Rothman - 5 hrs
Ironworker Jared Garrett - 5 hrs
Ironworker Ricky Damboise - 1 hrs
Ironworker John (Ryan) Duskin - 0.5 hrs
Generator (110 kW) - 5 hrs
Kubota Cart - 5 hrs
Radios (4 radios) - 11.5 hrs



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k-rail: 26 pcs @20' and 7 pcs @10'

Crane Mats (12x12 - 5'x16') - 14 pcs

Crane Mats (12x12 - 5'x7') - 4 pcs

Crane Mats (12x12 - 5'x8') - 26 pcs

See the attached Extra Work Order - Signed with ABF for CCO 314 work

INSPECTOR OT REMARK:

Field 8 hours on State Holiday: Today is the Martin Luther King Jr. State Holiday. ABF is working an 8 hour shift in the field, including work on CCO 314 operations, which includes a tensioning step on all 7 test rigs currently under load and addressing a jack/setup/skew issue at one test rig (TR 7). The ABF shift is 0700 to 1530, my shift is 0700 to 1530, and my OT hours are 0700 to 1530.